



**UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

09/319,566 08/09/99 HANSEN

H 27656/35739

EXAMINER

IM22/0221

JEFFREY S SHARP  
MARSHALL O'TOOLE GERSTEIN MURRAY & BORUN  
6300 SEARS TOWER  
233 SOUTH WACKER DRIVE  
CHICAGO IL 60606-6402

ANGEBRANDT, M

ART UNIT

PAPER NUMBER

1756

DATE MAILED:

02/21/01

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.  
09/319,566

Applicant(s)  
Hansen

Examiner  
Martin J. Angebrannt

Group Art Unit  
1756



☒ Responsive to communication(s) filed on 08/09/1999, 06/09/1999, 7/26/1999.

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 1-25 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1-25 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 3 & 7

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Art Unit: 1756

1        Claims 16-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

          The claims with the particular exclusions are confusing as the insertion at line 50 during PCT prosecution seems to conflict with lines 23-26 which seem to cover the same compound with different numbering around the ring. The applicant could obviate these issue by inserting the structures of the compounds which are to be excluded. (claim 16)

          Also is the language as modified in the PCT prosecution "the positions 1 and 2 or 3" to refer to compounds having substituents in the 1 and 2 or 1 and 3 position or to compounds having substituents in the 1 and 2 position or the 3 position ? (claim 16)

          In claim 19, , "n" is not in the structure.

2        The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

          A person shall be entitled to a patent unless --

          (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3        The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

          (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1756

4      Claims 1,2,6,7,11-14 and 25 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Anger et al. J. Phys. Chem., Vol. 99, pp. 650-652. (1995)

The 1,5-bisstyryl-3,7-dimethylcyclooctatetraene and the exposure thereof meet the requirements of the claims as the claims do not require any more than the isomerizations.

5      Claims 1-7,12,13,16-18 and 23-25 are rejected under 35 U.S.C. 102(b) as being fully anticipated by El Houar et al., Chemia vol. 50, pp 341 (7/8-1996).

See formulae 3 and 4.

The exposure of the compounds meets the requirements of the claims as the claims do not require any more than the isomerizations.

6      Claims 1-7,12,13 and 16-25 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Briquet et al., Helvetica Chimica Acta Vol 79, pp. 2282-2315 (1996).

Briquet et al., Helvetica Chimica Acta Vol 79, pp. 2282-2315 (1996) teaches that double bond shifts in heptalenes and cyclooctatetraenes are reversible, may be either thermally or photochemically induced and allow these molecules to act as molecular switches. (2282) Various configurations for the reversible compounds are shown on page 2285, including cases where the conjugated substituents are located alpha (1,2) or gamma (1,4) to each other. Differences in the spectra are shown on pages 2301-2304 and 2306. The structures on page 2286 show the formation of various compounds which have either H, Methyl, phenyl, styryl, 4-methoxyphenyl, 4-chlorostyryl, or 4-methoxystyryl as the "R" group. The exchange between methyl and phenyl groups is disclosed. (2283 figure text). Compounds 7a,10a, and 17b on page 2286 are not

Art Unit: 1756

excluded by the language of claim 16. Compound 7a,b is also shown on page 2290.

Compound 10a,b is also shown on page 2294. Compound 17b is also shown on page 2304.

The exposure of the compounds meets the requirements of the claims as the claims do not require any more than the isomerizations.

7 Claims 1-7,12,13 and 16-25 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Hafner et al., Bull. Chem. Soc. Jpn., Vol. 61, pp. 155-163 (1988).

Hafner et al., Bull. Chem. Soc. Jpn., Vol. 61, pp. 155-163 (1988) teaches the reaction of azulenes with dimethyl acetylenedicarboxylate to form chiral heptalenes. Compounds g,h,m,n,o,u and v on page 156 are not excluded by the language of claim 16. Compound 36a and 38a on page 161 are not excluded by the claim language of claim 16.

The exposure of the compounds meets the requirements of the claims as the claims do not require any more than the isomerizations.

8 Claims 1-7,12,13 and 16-25 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Weber et al., Helvetica Chimica Acta, Vol. 70, pp. 1439-1460 (1987).

Weber et al., Helvetica Chimica Acta, Vol. 70, pp. 1439-1460 (1987) teaches compounds 9 and 11 on page 1441 which are not excluded by the claim language of claim 16 (the esters are ethyl or styryl esters. The syntheses using dimethylene acetylenedicarboxylate is taught on page 1454.

The exposure of the compounds meets the requirements of the claims as the claims do not require any more than the isomerizations.

Art Unit: 1756

9 Claims 1,2,6,7,11-14 and 25 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Paquette, L.A., Pure Applied. Chem., Vol 54(5) pp. 978-1004 (1982).

Paquette, L.A., Pure Applied. Chem., Vol 54(5) pp. 978-1004 (1982) teaches t-butyl substituted cyclooctatetraene. (structures 44&45) Similar teachings with respect to 1,2 diphenyl substitution is taught with respect to structures 47 and 38 on pages 995,997, 998 and 1001.

The exposure of the compounds meets the requirements of the claims as the claims do not require any more than the isomerizations.

10 Claims 1,2,6,7,11-14 and 25 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Hafner et al., Pure Applied Chem., Vol. 65(1) pp. 17-25 (1993).

Hafner et al., Pure Applied Chem., Vol. 65(1) pp. 17-25 (1993) teaches the synthesis using bis-enamine and dimethylene acetylenedicarboxylate to form useful heptalenes on page 22.

Note compound 27.

The exposure of the compounds meets the requirements of the claims as the claims do not require any more than the isomerizations.

11 Claims 1-9,11-14 and 16-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over either El Houar et al., Chemia vol. 50, pp 341 (7/8-1996) or Briquet et al., Helvetica Chimica Acta Vol 79, pp. 2282-2315 (1996), in view of Van et al. '561.

Van et al. '561 teaches that it is old and well known that various photochromic materials can be dispersed in binder resins and used to record information. (1/65-2/9) Useful binders

Art Unit: 1756

include PMMA, polystyrene and the like. (4/51-55). These recording media are used in computers.

It would have been obvious to one skilled in the art to use materials known to be photochromic, such as those disclosed by either El Houar et al., *Chemia* vol. 50, pp 341 (7/8-1996) or Briquet et al., *Helvetica Chimica Acta* Vol 79, pp. 2282-2315 (1996) in conventional photochromic recording media where the photochromic dyes are mixed with a binder as this is old and well known based upon the teachings of Van et al. '561.

12 Claims 1-9,12 and 16-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over either El Houar et al., *Chemia* vol. 50, pp 341 (7/8-1996) or Briquet et al., *Helvetica Chimica Acta* Vol 79, pp. 2282-2315 (1996), in view of Hoysoya et al. '873.

Hoysoya et al. '873 teaches that photochromic materials are known to be useful in forming optical switches when dispersed in polymeric binder. Any type of photochromic materials may be used in the switches. These include PMMA, polystyrene, and various acrylate resins (6/10-27).

It would have been obvious to one skilled in the art to use materials known to be photochromic, such as those disclosed by either El Houar et al., *Chemia* vol. 50, pp 341 (7/8-1996) or Briquet et al., *Helvetica Chimica Acta* Vol 79, pp. 2282-2315 (1996) in optical switches using photochromic recording media where the photochromic dyes are mixed with a binder based upon the teaching of Hoysoya et al. '873 that any type of photochromic materials may be used in the switches.

Art Unit: 1756

13 Claims 1-7,10,12 and 16-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over either El Houar et al., *Chemia* vol. 50, pp 341 (7/8-1996) or Briquet et al., *Helvetica Chimica Acta* Vol 79, pp. 2282-2315 (1996), in view of Caulfield et al., "The Applications of Holography", pp. 30-33 (1970).

It would have been obvious to one skilled in the art to use materials known to be photochromic, such as those disclosed by either El Houar et al., *Chemia* vol. 50, pp 341 (7/8-1996) or Briquet et al., *Helvetica Chimica Acta* Vol 79, pp. 2282-2315 (1996) in conventional photochromic holographic media as this is old and well known based upon the teachings of Caulfield et al., "The Applications of Holography", pp. 30-33 (1970).

14 The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hanzawa et al., *J. Am. Chem. Soc.*, Vol. 103(9) pp. 2269-2272 teaches the use of 1,2 substituted cyclooctatetraenes (page 2270) and 1,4 substituted cyclooctatetraenes (page 2271).

Rhodes, C.J., *J. Chem Soc., Chem. Commun.* pp. 592-593 (1990) teaches the observation of cyclooctatetraene in a frozen Freon matrix.

15 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Angebrannndt whose telephone number is (703) 308-4397.

I am normally available between 7:30 AM and 5:00 PM, Monday through Thursday and 7:30 AM and 4:00 PM on alternate Fridays.

If repeated attempts to reach me are unsuccessful, my supervisor may be reached at (703) 308-2464.



Serial Number: 09/319566

Page 8

Art Unit: 1756

Facsimile correspondence should be directed to (703) 305-3599.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.



---

Martin J. Angebranndt  
Primary Examiner, Group 1750  
February 20, 2001